

of the 1897 Report is a full description of the use of a Lorenz apparatus (constructed to Jones's designs for the McGill University) in determining the absolute values of the same four coils. From this it followed that a Board of Trade ohm equalled 1.00026 true ohms.

In the interim—viz. in 1896—he gave an account of the correction that would have to be made in consequence of a very slight ellipticity of his large brass coil, which he found to exist in 1894, and he showed that his 1900 value of 106.307 centimetres for the ohm would have to be increased to 106.319 on this account.

The formula developed by him in 1888 for the calculation of the mutual induction of a circle and a coaxial helix, although comparatively simple, in view of the accuracy obtained with its use, led, in reality, to a long laborious calculation when employed in practice. Consequently he spent some of the leisure of his voyage home from Montreal in 1897 in working out a simplification of the method previously described and a more general solution. And the account of this formed the substance of the paper he read before the Royal Society in November of that year.

Jones's ampere balance, briefly described in Appendix iii. of the 1898 British Association Report, was designed of a form which would readily lend itself to the use of a new formula (also developed in the preceding Royal Society paper) for the force between a uniform cylindrical current sheet and a coaxial helix, which could be readily expressed in elliptic integrals.

The liberality of the British Association, and of Sir Andrew Noble, will enable his standard ampere balance to be realised. The love of his friend will accomplish its completion.

Through Cardiff's hushed streets, contrasting strangely with their noisy traffic of other Saturdays, the long procession, last week, wended its way. Bright was the van with the mounted escort and the firemen's glittering helmets, sombre the rear with the girl students in their caps and gowns. By his father's side, high up on the hill overlooking Swansea Bay, we laid him—the man of high ideals, the man who had lived a long long life though dead at the age of forty-five. W. E. AYRTON.

It was right that one who did so much for the educational advancement of Wales should be given a public funeral. A memorial service was held at the Park Hall, Cardiff, on Saturday morning; the Bishop of Llandaff read the lessons, while the sermon was preached by the Rev. J. Williamson. After the service there was a procession to the Great Western Railway Station, and the gathering included representatives of important municipal and public bodies, the University of Wales, the University colleges of Wales and other educational authorities and institutions. A special train conveyed the body and the mourners to Swansea, where the interment took place, the Mayor of Swansea and the members of the Corporation, as well as representatives of local educational bodies, taking part in the mournful ceremony.

NOTES.

THE Royal Society announces that it is about to make the first award of the Mackinnon research studentship. The studentship is founded under a bequest to the Royal Society by the late Sir William Mackinnon, Director-General of the Medical Department of the Army, of the residue of his estate upon trust to be applied for the foundation and endowment of such prizes or scholarships for the special purpose of furthering natural and physical science, including geology and astronomy, and of furthering original research and investigation in pathology as the Society may think best and most conducive to the promotion of those sciences and of original discoveries therein. The

committee appointed by the council of the Royal Society to advise upon the best mode of giving effect to the intentions of the testator recommended that the award should be in the nature of a studentship for the encouragement of research rather than a prize for the reward of past achievements, and that the studentship should be devoted to the maintenance of a student engaged in such researches as were indicated by the testator. The studentship will be awarded this year in one of the biological sciences, including physiology and anatomy, pathology, botany, palæontology and zoology; it will be awarded for one year, but will be renewable for a second year. The studentship is at present of the annual value of 150*l.*, but the awards may be multiplied in future, upon the determination of certain outstanding charges upon the property. Applications must be received not later than June 26 by the assistant secretary of the Royal Society, from whom further particulars may be obtained.

THE gold medal presented biennially by the Pharmaceutical Society in memory of Daniel Hanbury, for high excellence in the prosecution or promotion of research in connection with the chemistry and natural history of drugs, has this year been awarded to Dr. George Watt, reporter on economic products to the Government of India. Dr. Watt, says the *Pharmaceutical Journal*, was born at Old Meldrum, Aberdeenshire, on April 24, 1851, and was educated at the Grammar School, King's College, and Marischal College, Aberdeen, subsequently graduating as M.B., with first-class honours, in the University of Glasgow. He became assistant professor of botany at Aberdeen in 1871, and professor of botany at Calcutta University in 1873. His best-known work is the "Dictionary of the Economic Products of India," but he is also editor of the *Agricultural Ledger*, and of the report of the Central Indigenous Drugs Committee of India for 1900, as well as the author of reports on the pests and blights of the tea plant, on rhea and China grass, on lac and the lac industries of India, and on a plague in the betti-nut palms of India. He has also published a "Flora of Chamba," a monograph on the Primulacæ, and other scientific and technical works. Dr. Watt is still engaged in clearing up the difficulties that surround the botanical sources of aconite roots of Indian commerce, and has only recently furnished material for the investigation of kino.

THE conditions which will control the administration of Mr. Carnegie's munificent gift to Scottish Universities have now been published, and they remove the difficulties which presented themselves when the announcement of the donation was made, but no particulars were available as to its allocation. The annual income from the trust is estimated at 104,000*l.*, and it is to be administered by an executive committee of nine members, the first committee being constituted as follows:—The Earl of Elgin, who is to act as chairman, Lord Balfour of Burleigh, Lord Kinneir, Sir Henry E. Roscoe, Mr. Shaw, the Lord Provost of Edinburgh, the Lord Provost of Glasgow. Two remaining members are to be two of four trustees nominated by the University Courts, the members for Edinburgh and Aberdeen acting during the first two years, and the members for Glasgow and St. Andrews acting during the second two years. One-half of the net annual income is to be applied towards the improvement and expansion of the Universities of Scotland in the faculties of science and medicine, also for improving and extending the opportunities for scientific study and research, and for increasing the facilities for acquiring a knowledge of history, economics, English literature and modern languages, and such other subjects cognate to a technical or commercial education as can be brought within the scope of the University curriculum. The other half of the income, or such part thereof as in each year may be found requisite, is to be devoted to the payment of the whole or part of the ordinary class fees exigible by the Universities from students of Scottish

birth or extraction and of sixteen years of age and upwards, or scholars who have given two years' attendance after the age of fourteen years at State-aided schools in Scotland, or at such other schools and institutions in Scotland as are under the inspection of the Scotch Education Department. Any surplus remaining in any year from the income applicable to this head of expenditure is to be applied to the first head of expenditure. In the case of schools or institutions in Scotland established to provide technical or commercial education, the committee may recognise classes which, though outside the present range of the University curriculum, can be accepted as doing work of a University level, and may allow them and the students thereof to participate under both heads of the trust deed. The benefit of the trust is to be available to students of both sexes. The trustees are to have full power, by a majority of two-thirds of their number, to modify the conditions under which the funds may be applied so as to secure that these shall always be applied in the manner best adapted to meet the purposes of the donor as is expressed in the constitution, according to the changed conditions of the time.

THE new Pathological Institute at the London Hospital will be formally opened by Sir Henry Roscoe, vice-chancellor of the University of London, on Wednesday, July 10, at 3 o'clock.

THE American Chemical Society has elected the following honorary members:—Prof. W. Ramsay, Sir Henry E. Roscoe, Prof. E. Fischer, Berlin, Prof. A. Baeyer, Munich, and Prof. G. Lunge, Zurich.

THE gentlemen selected by the council of the Royal Society for admission as Fellows this year were elected at the meeting held last week. The qualifications of the new Fellows were given in NATURE of May 9 (p. 36).

THE sixty-ninth annual meeting of the British Medical Association will be held at Cheltenham on July 30—August 2. The president-elect is Dr. G. B. Ferguson. An address in medicine will be delivered by Dr. J. F. Goodhart and an address in surgery by Sir William Thomson. The scientific business of the meeting will be conducted in thirteen sections.

THE establishment of a Ministry of Commerce, under a minister of business experience, is being actively urged by the *Daily Express*. A provisional committee has been formed, consisting of a large number of Members of Parliament, civic authorities, presidents of Chambers of Commerce, and heads of important business firms. It is proposed to hold a public meeting in London at an early date, with the object of forming an association and generally to take practical steps in the organisation of the movement.

THE Paris correspondent of the *Times* announces that M. Th. Ribot, professor of experimental psychology at the Collège de France, the founder of the *Revue Philosophique* and the inspirer of an entire generation of students and professor of the new psychology, not only in France but all over the world, will retire on a pension, at his own request, at the beginning of November.

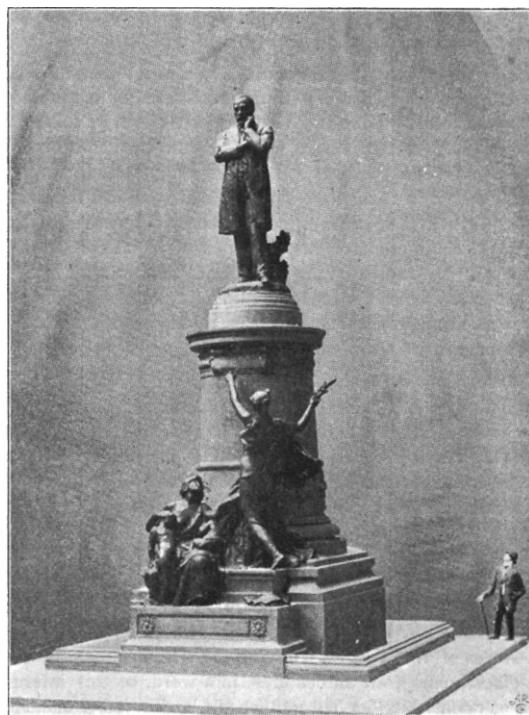
WE are informed that, in the unavoidable absence of the president of the Institution of Electrical Engineers, Mr. Alexander Siemens (past president) will, at the unanimous request of the council, assume the leadership of the Institution party throughout the visit to Germany. Members are reminded that their applications for tickets should be forwarded before Saturday next, June 15.

ACCORDING to the latest returns the population of Paris increased during the last five years by 6·98 per cent. At the last census, which was taken at the end of March 1896, the inhabitants numbered 2,536,834; but at the present time the total is 2,714,068.

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AT the annual meeting of the Akademie der Wissenschaften, of Vienna, on June 1, it was announced that Prof. Eduard Suess had been unanimously re-elected president for a further period of three years. Thereupon the Professor delivered his presidential address, which contained, amongst other scientific statements, some valuable references concerning the life and works of the late Prof. Max Müller, of Oxford, who for many years was honorary member of the Akademie. Prof. Berthelot, of Paris, was nominated honorary member, and the following gentlemen were elected as foreign corresponding members:—Prof. Schlegel (Leyden), Oppert (Paris), Linde (Munich), Retzius (Stockholm), Kowalesky (St. Petersburg).

BY the courtesy of the editor of the *Chemist and Druggist* we are able to give an illustration of the monument to Pasteur, shortly to be erected at Dôle, where he was born. The statue,



Monument to Pasteur, to be erected at Dôle.

the sculptor of which is M. Antonin Carles, is in bronze, and stands on a pedestal eight metres high. The figures at the base of the monument represent Humanity bringing two children to Pasteur, while Science offers him a palm.

THE *Electrician* announces that the system of etheric signalling devised by Sir William Preece has been successfully installed for the purpose of placing Rathlin Island in telegraphic communication with Ballycastle. The distance over which the signals are transmitted is about ten miles, as the waves go, and the lengths of inductive wire employed on each side are one and six miles respectively, the shorter length being on the island. The telephone was used as the receiver, with Morse signals transmitted by means of a "buzzer"—a more rapid if less sensitive arrangement than the Marconi coherer.

REFERRING to the death of the ethnologist Dr. Arthur Hazelius, on May 27, in his sixty-eighth year, the *Athenæum* says he was the founder of the Ethnographical Nordische Museum and of the unique and interesting Skansen, the open-air museum in the Zoological Garden of Stockholm, the result of nearly thirty years of labour, where the national life of old

Sweden is represented in vivid fashion, not merely by means of buildings, but also by the festivals and music of earlier times. Dr. Hazelius's son has, it is stated, been elected to succeed him as director of the Nordische Museum.

THE death is announced of Mr. William Walton at Little Shelford, near Cambridge. He was born in 1813 and graduated as a member of Trinity College in the mathematical tripos of 1836, being eighth wrangler. After taking his degree he remained at Cambridge and became a successful private tutor and lecturer in mathematics. He published a considerable number of mathematical treatises which for many years were used as text-books by students. His chief works were a treatise in illustration of the principles of theoretical mechanics and a volume on the differential calculus.

AN International Fire Prevention Congress met at Berlin last week, under the presidency of Count Komarowsky. The first resolution, which was unanimously carried, was proposed by Mr. Edwin O. Sachs, and was in the following terms: (1) That the serious investigation of the fire resistance of materials and systems of construction should be supported both by the Government and local authorities, as well as by those technical societies to whose members the results of such investigations are important in the practice of their professions. (2) In view of the fact that identical materials and systems of construction are frequently employed in different countries, an effort should be made to standardise the results obtained from fire tests in such a manner that the investigations made in different countries should be compared in a practical manner with due regard to units of measurement and temperature.

WE regret to see the announcement in the *Times* of the death of Prof. Bleicher, director of the school of pharmacy in the University of Nancy, and formerly professor of natural history at the same school. He was shot by a pharmacist from whom a sample of cinchona had been seized for analysis at the school. This crime has deprived France of one of the scholars who have done most to reveal to the world the geological interest of the frontier provinces of France. Prof. Bleicher's "*Les Vosges, Le Sol, et Ses Habitants*" is a classical treatise which every traveller in Alsace-Lorraine should always carry with him. Every year Prof. Bleicher spent his holidays on one or other of the slopes of the Vosges, studying the stratifications, the rocks, the glacial marks, all the features, in a word, of this interesting region, upon which he had published a large number of memoirs. He had begun life as Médecin-Major in the French African army, but left his work there in 1877 to become professor at Nancy, where he was very popular, often conducting students' scientific expeditions.

THE scientific study of plant associations and conditions of growth of crops was urged by Mr. R. Hedger Wallace in a lecture delivered at the museum of the Royal Botanic Society on Friday last, Sir George Kekewich, K.C.B., being in the chair. He remarked that commercial crop cultivation as a subject correlated the practical details taught by economic geography and botany. The mapping of plant associations would be of service, because wherever a man wishes to cultivate the ground a study of its actual flora is the most trustworthy guide to the possibilities of success or failure of new species. To the agriculturist and horticulturist the characteristics of plant areas are better guides than those of climate alone, because in plant distribution the influence of soil and drainage is correlated with that of climate. What are needed, the lecturer stated, are maps showing natural plant areas, cultivated crop areas and zones of cultivation, distinguished by definite colours like a geological map. With respect to plant distribution and zones of cultivation, attention was directed to the work that has been done in Ger-

many, especially by Profs. Oscar Drude and Engelbrecht. The botanist who studies the distribution of plants usually eliminates all consideration of the plants that are cultivated by man as vitiating his inquiry. Engelbrecht, on the other hand, deals entirely with the distribution of cultivated plants, though his survey is restricted to agricultural and horticultural produce grown outside the tropics. To study the commercial crop cultivation of a country the geographical conditions should be noted. Land forms, that is, the relief of the land, have a powerful influence, indirectly as well as directly, on plants, animals and human beings. An endeavour should therefore be made to gain some idea of what might be termed the climatic control of land forms, and the influence of land forms on natural flora and cultivated crops.

WITH reference to the inquiry of a correspondent as to the appearance of the Hoopoe on Lundy Island (p. 132), Mr. W. H. Graham writes from Fowey, Cornwall, "I dare say your correspondent would be interested to know that I saw a Hoopoe here in 1900, and one has been seen here this year; both were seen in the early spring, March, I think. Possibly those on Lundy Island have crossed from Cornwall."

THE invention of the Poulsen telegraphone, a full description of which in its latest form we hope shortly to publish, seems to have stimulated efforts to replace the wax cylinder phonograph by some more satisfactory arrangement. Descriptions of two new phonographs have quite recently been published—one the invention of Prof. Nernst and R. von Lieben, and the other invented by E. Ruhmer. A full account of Prof. Nernst's arrangement appears in the *Electrician* for June 7. The principle of which he makes use is the alteration of polarisation capacity and surface resistance of a metal used as an electrode in an electrolytic bath. A copper disc about 3 mm. thick is rotated at a fairly high speed, whilst there presses against its edge a thin wedge of wood soaked in an electrolyte. The secondary currents from the induction coil of a microphone transmitter are caused to pass through this contact and leave a record on the edge of the disc on account of the varying amount of chemical change produced. A telephone receiver is then substituted for the microphone, a battery being included in the circuit, and on again rotating the disc a reproduction of the sound is obtained. The best results seem to have been given by a solution of potassium zincate, using the edge of the copper disc as kathode, the wedge standing in a bath of the solution into which a zinc anode dips. With this, it is stated, the sounds can be reproduced clearly and distinctly two or three hundred times. The record can be cleaned off with fine emery paper.

RUHMER'S phonograph is based on an entirely different principle, thus making the third new phonographic method worked out in the past few months. The information at present at hand is, however, very scanty, so that we cannot do more than state the general claims of the inventor. Herr Ruhmer photographs, on a moving film, a sensitive flame which is being affected by sound vibrations, and thus obtains on the film a band of varying intensity; light is then projected through this band on to a selenium cell which is included in circuit with a battery and telephone. The variations in intensity as the film is passed before the source of light cause variations in current in the telephone circuit which reproduce the original sounds. The reproduction, it is said, is clearer than in the Poulsen telegraphone, and as an additional advantage multiplication of the records can be carried out photographically to any desired extent.

DURING the last few years the Danish Meteorological Institute has issued a very useful volume entitled "*Nautical-Meteorological Annual*." That for the year 1900 has just appeared and contains a summary of the state of the ice in the Arctic seas for

each of the months March to August, with maps. Generally speaking, there were considerable masses of ice during the season 1900 in the north-west of Barents Sea, around Spitzbergen and in the Kara Sea, less than usual between Franz Joseph Land and Nova Zembla and on the east coast of Greenland, while in Baffin Bay and near Labrador the conditions were particularly favourable. The volume also contains tables showing the diurnal amplitude of the air at the various Danish light-vessels, and the surface temperature of the sea in the northern Atlantic Ocean and Davis Strait. The greater part of the work is taken up by carefully compiled tables of general meteorological observations, taken every four hours by the light-keepers, together with monthly means. These form a valuable contribution to the meteorological statistics of the northern parts of Europe.

M. D. KORDA announces in the *Bulletin* of the French Physical Society that in a fraction of a minute he has succeeded in crystallising ferrosilicium in the bottom of a crucible by cooling with water. The form of the crystals varies with the proportion of silicon—long needles for 10 to 100 of silicon (Fe_2Si), tetrahedra of 1 to 10 mm. length of side for 22 to 23 per cent. of silicon (FeSi), and laminæ of micaceous character for 50 per cent. of silicon (FeSi_2). Crystals of ferromanganese or ferrochromium can be similarly formed.

DR. EMILIO ODDONE describes, in the *Rendiconto* of the Lombardy Institution, experiments conducted for the purpose of determining the mean coefficient of transparency of the air over distances considerably greater than those previously experimented on, and he gives examples of the application of this method to distances of 45, 85 and 135 kilometres. The coefficients are fairly high, increasing with the distance, and the ultimate values are only slightly less than those corresponding to vertical vision. From this property, Dr. Oddone thinks it possible to calculate approximately the thickness of the atmosphere in the direction of the zenith.

THE *Archives* of the Röntgen Ray contains a short programme of the Röntgen Exhibition to be held in Hamburg in connection with the seventy-third meeting of the Deutscher Naturforscher und Aerzte. The scientific part will be in the hands of Dr. Albers-Schönberg, Dr. Walter and Dr. Hahn, while the literary part will be taken by Messrs. Lucas Gräfe and Sillem. The physical section will include induction coils and contact breakers, portable apparatus, tubes, fluorescent screens, operating tables, stereoscopes and other accessories, power for working the coils, &c., being obtainable at 220 volts continuous and 120 volts alternating current. The medical section will exhibit the latest achievements in radiography and the therapeutic uses of Röntgen rays. In addition with the above it is mentioned that at a recent sitting of the Prussian Kultus Ministerium the Universities received a grant of 1000*l.* for additions to the Röntgen ray departments.

UNDER the title "A New Era in Interior Lighting," Mr. Charles L. Norton writes in the *Technology Quarterly* advocating the use of ribbed, corrugated and prismatic glass windows for diffusing light in the interior of rooms and offices. The only comment we can make is that as modern civilisation compels men to work in dingy offices and factories it has been necessary for modern civilisation to devise some means of lessening their dinginess, then "adaptation to environment" will come in and give us a civilised race which actually prefers this kind of illumination to that of the good old plate glass window. Of this tendency Mr. Norton himself affords an instance when he expresses the view that it is to be regretted, but it is certainly true, that strong objection is often made to the "shut in" feeling which some people experience in rooms glazed wholly with diffusing glass. He also considers it one of the uses of the

diffusing window that it allows of the closer approach to one another of tall buildings, with a resulting economy of land—and, we should say, an aggravation of the unnatural conditions under which human life maintains its unlovely struggle for existence in densely populated centres.

IT is interesting to notice how the naval architect is becoming more and more dependent on a knowledge of applied mathematics and mathematical physics for the solution of the problems involved in perfecting the construction of steamships. It is only recently that the balancing of marine engines has received serious attention, and this problem has brought the principles of rigid dynamics as well as Fourier's series under the notice of the shipbuilder. But when the parts of an engine have been balanced on the hypothesis that they are perfectly rigid there still remain the effects of their elasticity to be taken into account. Mr. J. H. MacAlpine has recently communicated to the *Journal* of the American Society of Naval Engineers a monograph of 288 pages on "Inertia Stresses of Elastic Gears." The investigation seems to have been suggested, in the first instance, by the defective working of certain forms of valve gear. While Mr. MacAlpine hardly thinks that the elaborate processes of calculation which he gives can be frequently repeated in the ordinary course of designing, they might, at least partly, be resorted to with advantage and with but little labour, in cases where the effect of elasticity seems doubtful. Their application would have saved many expensive breakdowns in the past, and if applied to such cases as the *Newark*, where serious trouble has arisen, would gradually accumulate a store of valuable data which could not fail to be useful.

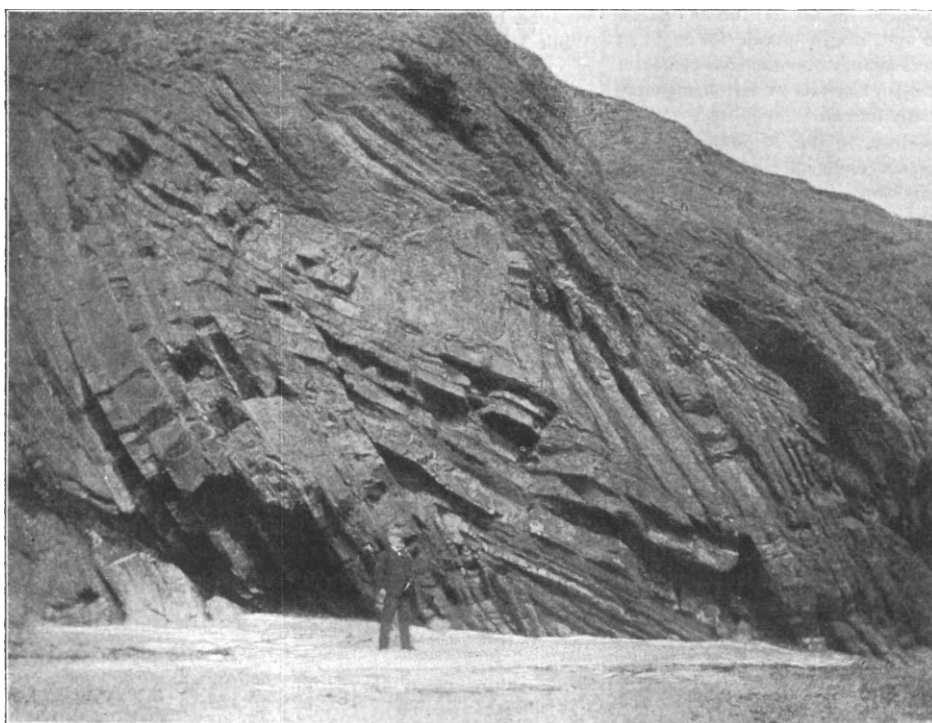
IF we may judge by the Report of the Marlborough College Natural History Society for 1900, the issue of the Victoria series of County Histories is having a good effect on institutions of this nature in calling attention to the incompleteness of their records of local faunas. In this particular instance, the local lists of the popular groups of Hymenoptera, Lepidoptera and Coleoptera were found to be well worked up, but those of other groups of insects had been much neglected. The editor also calls attention to the advisability of schoolboys confining their attention to a single section of zoology; otherwise, with the multitude of other studies and occupations, any real progress is impossible.

WE regret to learn, from a communication by Mr. A. J. North to the Records of the Australian Museum for 1901, that the destruction of native birds in New South Wales is attaining alarming proportions. After referring to a recent newspaper article containing an account of the slaughter of about 250 lyre-birds by one man during a single season, the author dwells on the injury done to bird-life in Australia by the growth of the great cities and their suburbs and the consequent clearance of timber and coppices. In Sydney the diminution in the number of indigenous birds owing to this cause is bad enough, but it is nothing to what has occurred in Melbourne, which is virtually denuded of trees for miles around. But this is by no means all, for the introduction of foreign mammals has played havoc with many kinds of native birds. Now that the rabbits have been eradicated in many districts the cats introduced to prey upon them have turned their attention to the birds; and the introduced foxes, in addition to robbing hen-yards, destroy hosts of indigenous birds. Neither can the sparrow and the starling be exonerated from blame in the matter. Mr. North urges the necessity of the duty of bird-protection being taught in the schools, as in the United States.

THE significance of spiral swimming—that is to say revolution on their own longer axis—by many of the lower organisms, such as the ciliate and flagellate infusorians and volvox, is discussed by Dr. H. S. Jennings in the May issue of the *American Naturalist*.

The function is considered to be of considerable importance. It has been found that the same side of the organism is always directed towards the outer side of the spiral. In the case of spherical organisms like *volvox* the spiral movement probably serves merely to correct any accidental deviations from a straight course; but without this device many creatures would be quite unable to steer straight, and many of them would merely describe circles without making any forward progress at all. "The simple device of revolving in the axis of progression is surprisingly effective, in that it compensates with absolute precision for any tendency, or combination of tendencies, to deviate from a straight course in any direction."

WE have received three specimen numbers of a popular Danish illustrated weekly magazine called *Frem* (Forwards), and devoted to ancient and modern history, archæology, literature and science. The outer portions of the paper are in quarto, but the inner portion, when cut up, consists of an octavo sheet,



Contorted Beds at Jangye-Ryn, Gunwallce.

containing four pages each of various independent works. The parts before us, published in September and October, 1900, include parts of a novel; a translation of Shakespeare's "Henry IV."; a work on ancient history by Johan Ottosen, with illustrations of buildings, a cross, &c.; and a work by Levyson on the human body, with numerous text illustrations, and coloured diagrams of the organs of the upper part of the body and of the heart. The quarto contents of the parts are equally varied, and among them we notice articles and illustrations relating to the tortoises of the Orinoco, a Khirghis mother and children, edible and poisonous fungi, runes, old buildings, gout, the Moloch lizard, the Franco-German war, China, and the Transvaal, &c. It is one of the most miscellaneous publications which have come under our notice, in some respects resembling the old *Penny Magazine* of sixty years ago. *Apropos* of Shakespeare, we may mention that the plays are being translated into

Finnish; and seventeen have already been published by the Finnish Literary Society at Helsingfors.

THE *Journal of Botany* for June gives the more interesting notes contained in the Botanical Exchange Club Report for 1899, which is now edited by the Rev. W. R. Linton.

MR. F. N. WILLIAMS has issued a specimen of a "Prodrömus Floræ Britannicæ," in which an attempt is made to epitomise the distinguishing characters of all British species and subspecies of plants, the descriptions being given in Latin, "the nominative absolute style with separate sentences."

THE Royal Geological Society of Cornwall has lately issued its eighty-seventh Annual Report, together with the papers read during the session 1889-1890 (*Transactions*, vol. xii. part 6). Mr. J. B. Hill, who is engaged on the Geological Survey, has brought the experience which he gained in Argyllshire to bear on the slaty rocks of Cornwall. He finds the structures there to be identical with those of crystalline schists, but the mineral-

isation is wanting. In the Falmouth district the strata have been thrown into a series of isoclinal folds accompanied by small faults, and further minor structures have been set up until the mass has become full of minute folds and thrusts. These disturbances have in some cases caused, not only severing and brecciation of the bands, but also the rounding of fragments so as to produce "crush-conglomerates." The author remarks that had the rocks been subjected to these stresses at a greater depth and below the zone of fracture, where they would not have been so free to move, they would have been converted into true schists. Mr. Howard Fox gives a brief description of the remarkable contorted beds of Gunwalloe, in the Lizard district near Helston, together with an excellent

photographic plate (which we reproduce by permission of the Society). The thick pale bands are grits, the thin dark bands are much squeezed shales, and there are numerous quartz and calcite veins. The beds appear to belong to the same group as the Ordovician cherts of Mullion Island. In an article on the sequence of the Lizard Rocks, Mr. Harford J. Lowe brings forward evidence to show that the granulitic series is later than, and intrusive in, the serpentine.

WE have received the first number of a new botanical journal, to be issued at irregular intervals, *Biltmore Botanical Studies*, embracing papers by the director and associates of the Biltmore Herbarium, North Carolina. The present number is occupied by five papers on descriptive phanerogamic botany.

IN a new edition of "Modern Cremation," which has just been published by Messrs. Smith, Elder and Co., Sir Henry

Thompson adds some important matter to the previous edition, and brings the history of the practice of modern cremation up to the present time. The case for cremation or some method of disposing of the dead other than burial is given much support by the evidence described in this book. The practical details given in an Appendix will be of service to people seeking information upon the subject.

MESSRS. DULAU AND CO. have sent us a copy of their various catalogues of zoological and palæontological books and pamphlets issued between 1896 and 1901. These, which are arranged in subjects, have been bound together into one volume, which will be found of considerable use to the working naturalist as a guide to much of the literature of any subject on which he may be engaged.

A NEW edition, revised and enlarged, of Prof. W. C. Unwin's "Elements of Machine Design" (Part I) has just been published by Messrs. Longmans, Green and Co. The plan and general arrangement of the book remain the same as the original, published many years ago, but about a hundred pages have been added and numerous alterations have been made.

A NEW edition of "Telephone Lines and their Properties," by Prof. W. J. Hopkins, has been published by Messrs. Longmans, Green and Co. Among the additions are an account of the latest developments in the design of long lines, a chapter on "composite" working and wireless telephony, an abstract of Dr. Pupin's paper on telephony over cables and long-distance air lines, and a paper on inductive disturbances in telephone circuits.

RECENT numbers of American geographical journals contain much information about Alaska. In the May issue of the *National Geographic Magazine* Mr. Henry Gannett publishes an article on the general geography of Alaska. The second number of *Mazama* is devoted almost entirely to Alaska; it includes an account of the Harriman Alaska Expedition and a reproduction and explanation of an Indian map from the Chilkah to the Yukon. *Mazama* also contains a paper on the flora of Mount Rainier, by Prof. C. V. Piper.

THE value of "The Statesman's Year Book" (Macmillan and Co., Ltd.) can only be rightly appreciated by those who keep the annual at hand for ready reference. The edition for 1901 has now appeared, and Dr. Scott Keltie and his colleague, Mr. Renwick, are again to be congratulated upon its publication. The work is an epitome of political geography, containing the essential particulars concerning the constitution, communications and commerce of every country in the world. The changes of the past year have necessitated the revision of several parts of the book. The Transvaal and the Orange Free State are now included in the section on the British Empire, and the Australian Commonwealth is described. The results of the censuses taken during last year and the early part of this are also given. There are five maps, the first giving a comparative view of geographical knowledge and political divisions in 1800 and 1900, and the second showing the political partition of Europe in the same years. The other maps represent railways, navigable waters and steamship routes in North America, South America and Australia. The volume now extends to 1320 pages, and ought not to be much further increased in size or it will lose its present handy character.

THE additions to the Zoological Society's Gardens during the past week include a Chacma Baboon (*Cynocephalus porcarius*, ♂) from South Africa, presented by Mr. Geo. Blay; a Rhesus Monkey (*Macacus rhesus*) from India, presented by the Hon. Mrs. Morrison; a Bonnet Monkey (*Macacus sinicus*) from India, presented by Colonel B. McCalmont; a Pin-tailed

Whydah Bird (*Vidua principalis*) from West Africa, presented by the Hon. Mrs. Parker; two Ocellated Sand Skinks (*Chalcides ocellatus*), South European, presented by Mr. W. H. St. Quintin; two Common Vipers (*Vipera berus*), British, presented respectively by Mr. Gerald Leighton and Mr. John Wright; a White-collared Mangabey (*Cercocebus collaris*), two Yellow Baboons (*Cynocephalus babouin*) from West Africa, a Yellowish Capuchin (*Cebus flavescens*), a Brazilian Tortoise (*Testudo tabulata*) from South America, a Silky Marmoset (*Midas chrysoleucos*) from Rio Madeira, Brazil; two Pinche Monkeys (*Midas oedipus*) from Colombia, a Three-banded Douroucoul (Nictipithecus trivigatus) from Guiana, three Serrated Terrapins (*Chrysemys scripta*) from North America, two Black Tortoises (*Testudo nigra*) from the Galapagos, a Black Iguana (*Metopoceros cornutus*) from the West Indies, a Common Chameleon (*Chamaeleon vulgaris*), a Basilisk Chameleon (*Chamaeleon basiliscus*), from North Africa, a Blue-tongued Cyclodus (*Tiliqua scincoides*), thirteen Black and Yellow Cyclodus (*Tiliqua nigro-luteus*) from Australia, four Green Lizards (*Lacerta viridis*), three Dark Green Snakes (*Zamenis gemonensis*), three Tessellated Snakes (*Tropidonotus tessellatus*), two Esculapian Snakes (*Coluber longissimus*), a Four-lined Snake (*Coluber quatuorlineatus*), European; a Chained Snake (*Coluber catenifer*) from California, deposited; a Red Deer (*Cervus elaphus*), born in the Gardens.

OUR ASTRONOMICAL COLUMN.

TWO NEW VARIABLE STARS.—Prof. W. Ceraski announces in the *Astronomische Nachrichten* (Bd. 155, No. 3718) the discovery of two new variables at the Moscow Observatory. The measures were obtained from photographs.

R.A.			72, 1901 (Lyræ).			Decl.		
h.	m.	s.						
19	7	37.01	...	+33°	10'	12.6"	...	1855.0
19	9	17.62	...	+33	14	38.1	...	1900.0

The brightness varies from the 10th to 12th magnitude, in a period of from 0.27–0.81 of a year. At present it is about the 11th magnitude, and is increasing.

R.A.			73, 1901 (Scuti).			Decl.		
h.	m.	s.						
18	46	19.7	...	–12°	46.9'	...		1855.0

This variable is of the Algol type; normal magnitude about 9.0. Its period is about 22.9 hours, and its brightness varies from 9.1 to 9.6 in five hours. There appears to be evidence of two principal minima separated by a secondary one.

UNIFORM TRANSMISSION OF ASTRONOMICAL TELEGRAMS.—Prof. H. Kreutz, of the Central Astronomical Telegraph Bureau at Kiel, has issued a circular in several languages suggesting instructions for securing the adoption of a uniform system for the transmission of astronomical telegrams from the various observatories of Europe to the central bureau for subsequent general circulation.

The code suggested is very similar to that already in use for the telegrams which have been sent out from Kiel for several years past. A definite order is agreed on for the descriptive items of object, discoverer or observer, time, position, magnitude, motions and remarks, with a terminal number to control the accuracy of the numerical part of the message. In the circular issued examples of various possible forms of messages are given, both at length and in code, dealing with the discovery of comets or planets, new stars, orbits of comets, ephemerides, &c., perusal of which will easily make the scheme clear.

PHOTOGRAPHY OF CORONA.—In a reprint from a paper read before the Photographic Society of Philadelphia on March 13, 1900, Mr. H. W. Du Bois draws attention to the possibilities of the method, outlined by Prof. Nipher, of developing a positive from a plate which has received great over exposure, in connection with the problem of the daylight observation of the solar corona.